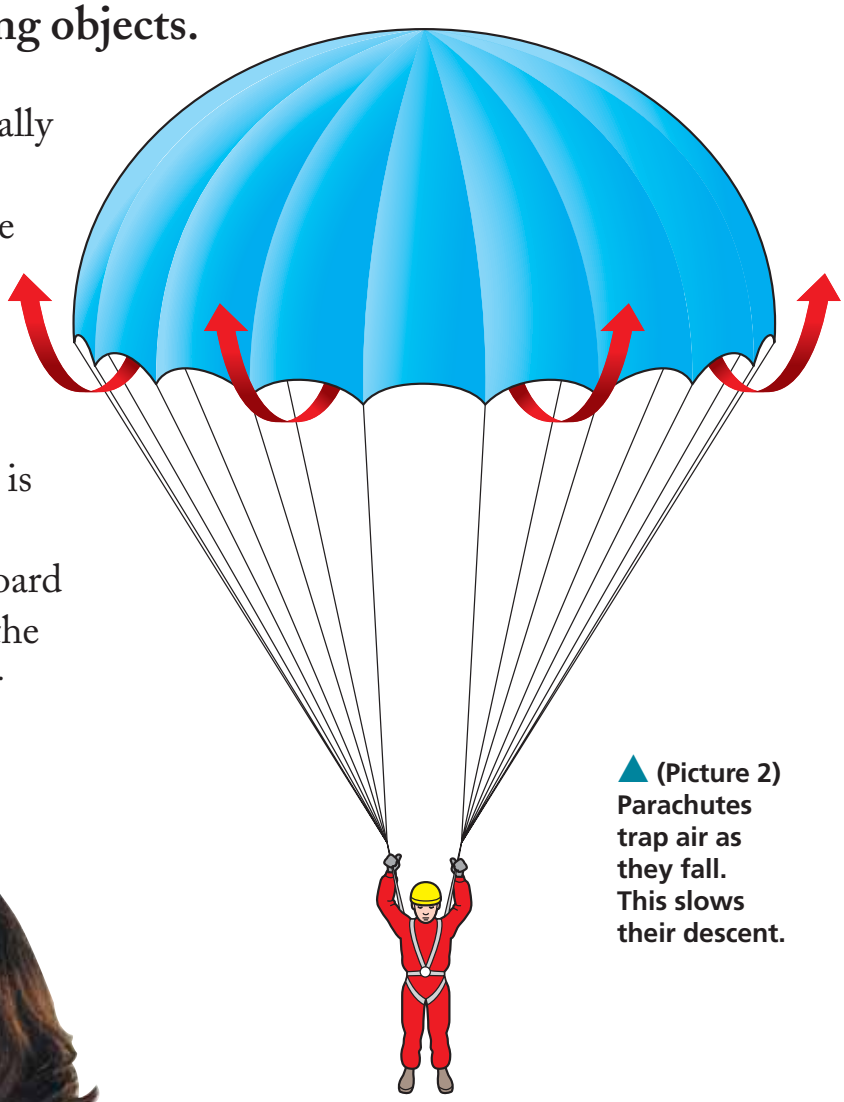
10 Air resistance

Although the air seems thin, it is thick enough to slow down fast-moving objects.

When we walk about we do not usually notice the air. This is because air is naturally 'thin' and easily moves aside as we walk through it. However, when we move faster, the air does not move aside as quickly, and so we become aware of the air pushing back at us. This pushing is called **AIR RESISTANCE**.

If you hold a large sheet of cardboard in front of you and then run about, the friction of the air becomes very clear (Picture 1).



▲ **(Picture 2) Parachutes trap air as they fall. This slows their descent.**

▼ **(Picture 1) If you run while holding a sheet of cardboard, you can feel the force of the air against the card.**

Making use of air friction

The friction of the air can be very useful to slow something down, or to keep it in the air longer.

A parachute is an example of where the friction in air is used this way (Picture 2). The large parachute is designed to trap as much air as possible, allowing it to flow out of the sides slowly.

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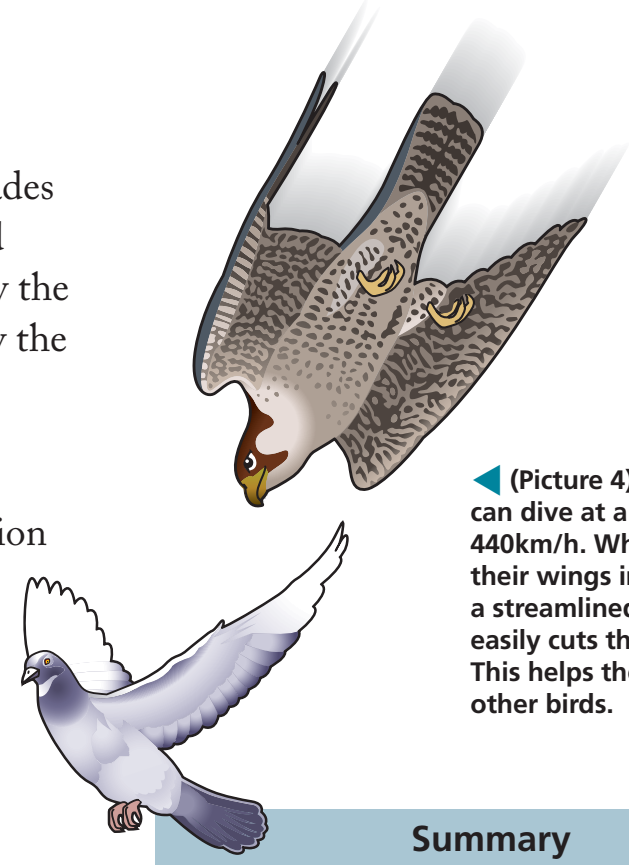
▼ (Picture 3) Keeping down the air resistance on trucks means that they use less fuel and so can carry goods more cheaply.

Some seeds also use natural parachutes, or spinners. These are blades that catch the air as the seeds fall and slow down the rate of fall. In this way the seeds can be carried long distances by the wind before they fall to the ground.

Streamlining

Most often we want to keep the friction of the air very small. This means that we need to design things that cut through the air as easily as possible. Cars, trucks, trains and aircraft have streamlined shapes that cut through the air with as little resistance as possible (Picture 3). Birds also have streamlined shapes that help them fly easily through the air (Picture 4).



◀ (Picture 4) Peregrines can dive at a staggering 440km/h. When they tuck their wings in they form a streamlined shape that easily cuts through the air. This helps them to catch other birds.

Summary

- Air resistance is only important if something moves quickly.
- Streamlining helps fast vehicles and birds move more easily through the air.

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